

# P14416 P3 Arborloo Concrete Base Development Mold Test Plan

Date Completed: \_\_\_\_\_

Performed By: \_\_\_\_\_

**Summary:** The following tests are designed to make sure the base is assembled in a timely manner with minimal tools. **Make sure the Mold Test Plan is the first test plan completed.**

## Specifications Tested

Engr. Spec. #	Specification (description)	Unit of Measure	Marginal Value	Ideal Value	Pass/Fail/Marginal
ES7	Time to assemble	Hours	2	1	
ES8	Hand tools needed to assemble	Qty	3	0	

## Test Equipment

Check off	Equipment Description
	Gloves
	Stopwatch
	5 Gallon Bucket
	Trowel
	Coconuts
	Styrofoam
	Glenium
	Portland
	Water

## Revision History

Revision	Description	Date
1	Created Document	12/5/13
2	Added Ideal Value, Pass/Fail Columns; Pass Fail Criteria	2/18/14
3	Added pictures	3/18/14

## Sections

**Part I: Time to Assemble Test**

**Part II: Hand Tools Needed to Assemble Test**

### Part I: Time to Assemble Test

Date Completed: \_\_\_\_\_

Performed By: \_\_\_\_\_

**Procedure: (assuming they have mold made and all materials in front of them)**

\_\_\_ 1. Start stopwatch and begin mixing up the concrete (with just hands at first)

- \_\_\_ 2. Could add “recipe” for mix here to make sure everything is included or include kit of pre-measured quantities. [Recipe referring to measurements of items in our mix ex: 2.5 lbs coconuts, etc]
- \_\_\_ 3. Place plastic sheet in mold
- \_\_\_ 4. Once “recipe” is mixed, begin to lay up the mold, making sure to “tamper” the concrete over the entirety of the surface
- \_\_\_ 5. Stop the stopwatch once the mold is smoothed over
- \_\_\_ 6. Record the number of people and time it takes to mix the concrete as well as lay up the mold. Also record the number of tools and which tools are being used.
- \_\_\_ 7. Repeat steps 1-6 and add another tool each time.

**Comments:**

**Picture of “fully assembled” test:**



**Sign off on section completion before continuing:** \_\_\_\_\_

**Part II: Hand Tools Needed to Assemble Test**

Date Completed: \_\_\_\_\_

Performed By: \_\_\_\_\_

**Procedure:**

\_\_\_ 1. Looking back to Part I, check the time it took to mix and lay up the molds with different tools and see what a good time is without sacrificing too much in price of tools

\_\_\_ 2. More of an observation of previous data

**Comments:**

**Sign off on section completion before continuing:** \_\_\_\_\_

**Summary of Data**

Base Number and Dome/Slab	Time to Assemble (hours)	Number of Tools Needed to Assemble (qty)	Max Load Seat can Support (lbs)

**Pass/Fail Criteria**

Rqmt. #	Engr. Requirement (metric)	Customer Req	Unit of Measure	Marginal Value	Ideal Value	Pass/Fail Criteria
S1	Purchase Cost for base	1	\$	25	25	Fails if purchase cost >\$25
S2	Load it can support (7 days)	3	lbs	270	450	Fails if load < 270 lbs
S3	Hole diameter it covers	2	in	18	20	Fails if clearance between outer edge of concrete base and diameter of plywood hole < 2"
S4	Squat hole widest point	3	in	9	10	Passes if diameter is between 9"-11"
S5	Static coefficient of friction against ground	3	-	0.5	0.6	Use scale to measure force it takes to move
S6	Tripping hazards	3	qty	0	0	N/A
S7	Time to assemble	5	hours	2	1	Fails if assembly time > 2 hours
S8	Hand tools needed to assemble	1,5	qty	3	0	Fails if tools needed quantity > 3
S9	Weight of heaviest assembled piece	4,5	lbs	100	80	Fails if weight of heaviest piece is > 100 lbs
S10	People needed to move heaviest assembled piece	5	qty	2	1	Fails if number of people > 2
S11	90% of Users find easy to clean	4,5	survey	90%	100%	Passes if within ± 5% of 90%
S12	Lifecycle	1,8	years	TBD	TBD	TBD
S13	90% of Users find comfortable	6	survey	90%	100%	Passes if within ± 5% of 90%
S14	90% of Users find visually appealing	7	survey	90%	100%	Passes if within ± 5% of 90%
S15	Pieces for available upgrade	9	qty	2	3	N/A

Customer Requirements	
1	Affordable
2	Covers Hole
3	Safe to Use
4	Moveable
5	Simple to Setup
6	Comfortable
7	"Modern" Aesthetics
8	Servicability
9	Allows Financing in Parts